

2025

M.Sc. 1st Semester Examination

APPLIED MATHEMATICS

Paper : MTMC403X0

[Research Methodology and Ethics]

Full Marks : 50

Time : Two Hours

The figures in the margin indicate full marks.

*Candidates are required to give their answers
in their own words as far as practicable.*

Group - A

Answer any *four* questions : $2 \times 4 = 8$

1. What is quantitative research? Name one common method used in quantitative research. [CO1]
2. What is ghost and guest authorship? [CO3]
3. What are the differences between sampling and census? [CO2]
4. What are the objectives of research? [CO1]
5. What is research ethics? [CO4]
6. What is a literature review? [CO3]

P.T.O.

(2)

Group - B

Answer any *four* questions : $4 \times 4 = 16$

7. Explain the difference between “method” and “methodology” in research. [CO1]
8. What are the common mistakes to avoid while formulating a research problem? [CO2]
9. What is self-plagiarism? Why is it a concern in academic writing? [CO3]
10. Explain the importance of publication ethics in scientific research. [CO4]
11. Discuss various sampling techniques with examples. [CO2]
12. Explain the terms — Fundamental Research, Basic Research, Applied Research and Industrial Research with suitable examples. [CO1]

Group - C

Answer any *two* questions : $8 \times 2 = 16$

13. Discuss research misconduct in detail, highlighting fabrication, falsification, and plagiarism. [CO4]
14. Explain the ethical responsibilities of authors, reviewers, and editors in the publication process. [CO4]
15. Describe the step-by-step process of developing a good research design for a mathematical problem. [CO2]

(3)

16. (i) What is a literature review? Explain the effective literature studies approach for a research problem. [CO3]
- (ii) What is the purpose of citation indexes? [CO4]

Internal Assessment : 10 marks
